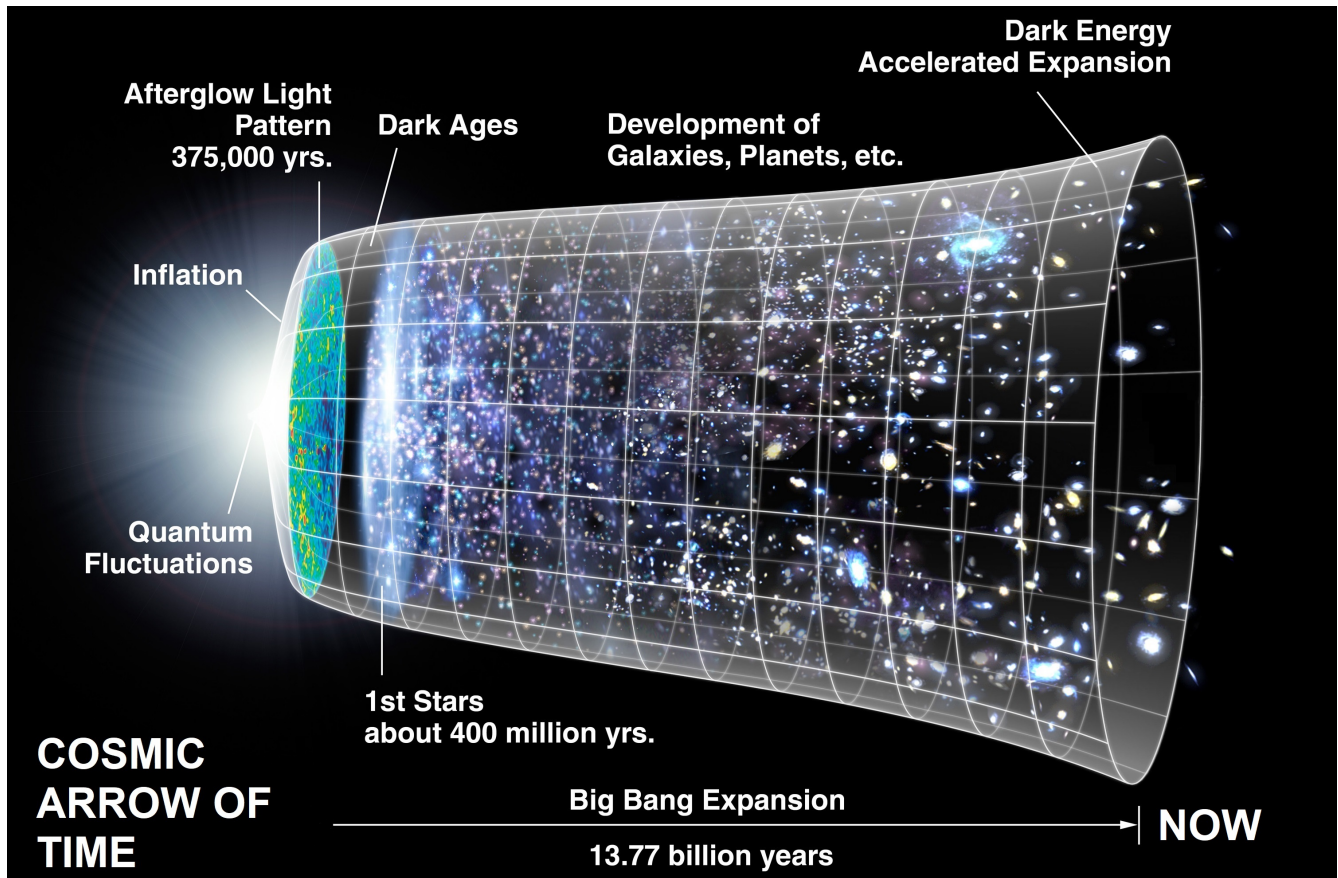


# Time and Cosmology

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**Figure 1** This illustration from Wikipedia [click on picture for more] is **misleading** in that it **appears** that the universe is expanding **in** space and time [a.k.a. space-time]. This assumes that space-time is a fundamental arena that exists *independently* of the actual observable cosmos within which the universe evolves. Space-time is only a **map** and not real like the vacuum and the matter floating on it. The assumption that the universe exists inside space-time leads to erroneous concepts of time.

A **cosmic arrow of time**, or **cosmological time**, is a time **coordinate** commonly used in the Big Bang models of physical cosmology and a component of **space-time**. This *assumes* that time is a tool for mapping the evolution of the universe and *fundamental* like the **vacuum** [real] that defines what we call space [geometric fabrication] .

**Cosmic time** is a *measure of time* defined by comparison of observed events with the signals from a standard clock by taking the present time [the 'now' of our consciousness] as a cosmic reference point and mapping the *ticks* of the clock to the information created by observed events and detected with our senses or our instruments then storing these as sequentially stacked memories in our brains. Our brains [T-computer](#) makes this all possible and allow us

to construct maps of evolution from time labeled information states or info-states such as memories.

The Big Bang may be taken as reference to define time as the *age of the universe*, also known as time since the big bang. The current physical cosmology estimates the present age as 13.77 billion years.

Here is where one must have a clear understanding about the fundamental nature of time in order to interpret a cosmic arrow time as a measure of the evolutionary stages of the universe. A review of what time is and what time is not is in order here.

### **A review of the 7 principles found to be the actual nature of time.**

1. **Philosophy of Time:** time exists as information, NOT as a dimension. Time is as real as information is real.

2. **Arrows of Time:** Cosmic Arrows of Time and all other arrows of time only exist as constructions from signal/information flow in [causal networks](#). All arrows of time point from cause [source] to effect [sink] from simple 2-level systems at the quantum scale such as photon emission in atoms up through the cosmological domain through hierarchical scaling of interconnected causal networks at various [plateaus of complexity \[POCs\]](#).

3. **Direction of Time:** only exists as directions associated with vectors representing arrows of time pointing from cause to effect [source to sink] in the causal networks of the evolving universe.

4. **There is no Time to travel 'in'**, only space [i.e. the vacuum] where the 'now' created by our consciousness is all we can directly experience. Note that the vacuum exists as a physical entity and space is only a map of this fundamental basis for the universe.

### **"The Map is not the territory" - Alfred Korzybski**

5. **Our brains T-computer creates 'time'** labeled maps of the patterns of observed changes in the configurations of matter in the universe into sequential time stamped and labeled memories. Change is a Fundamental property of the universe, time is not.

### **"No change, then, no time" – J. B. Priestley**

6. **The Problem of Time** therefore has been solved using [Feynman Clocks](#), T-computers, and Causal Networks.

7. **The Vacuum is space and Time is a measure of Changes** in the configurations of matter floating on the surface of the vacuum. We attribute dimensions to the vacuum [space] as part of our application of geometry [models] to the real world. The vacuum is much more complex than mere 'empty' space. The vacuum is in fact a multi-vacuum with properties that depend locally on matter and globally on cosmic universality. Cosmological evolution is measured by the maps of change we construct using time as a metric.

See this link for a discussion of [why space-time diagrams are wrong](#) especially when looking at time as a fundamental property of the universe:

**Special Note:** Time is still useful as a measure of change in our daily lives. Using repeating reproducible regular signal generating systems such as standard clocks [e.g. atomic clocks, watches, computer clocks etc.] gives us a way to create our ordered time maps. Time produced by comparison of a standard clock with the observed system and processed by our brains T-computer or similar 'clocked' information processing devices is 'real'. The reality of time as a pacer of human activities is embedded in our lives.

After this brief summary of the true nature of time, we can look at how cosmic time is constructed from observed changes in the configurations of matter in the universe.

### **CONCLUSIONS:**

When reduced to its simplest terms **cosmic time** is really an *assigned* arrow of time to the various models we have for the universe, its age, and its evolution. Cosmology is intimately connected with time as a parameter for discussing how we got to the 'now' of our existence from a past [look back 'time'] and forward into a fictitious or imagined future in which we attempt to predict the outcomes of various events in the universe. Key to this is that cosmic or cosmological time is our construction in our attempts to model the cosmos where *time is not a dimension* but a tool created from information that is produced by complex changes in the configurations of matter in processes which are fundamental properties of the evolving universe.